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[Hub Page](#)

[Table of Contents](#)

[Author Index](#)

[Search](#)

[Support](#)

[Sponsors](#)



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Baseline of soil CO₂ flux in the Hontomin site (Burgos, Spain)

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CO_{2sc} is planned to be injected in 2013 at the Hontomín site (NE Spain) as a part of the EC-funded OXYCFB300 project. Approximately 100,000 tons of CO₂ is going to be injected in a saline reservoir (1500 m depth) hosted by Lower Jurassic limestones and sealed by Lower Cretaceous clay formations.

One of the aims of the project is to demonstrate that CO₂ storage is safe, and there is a control on the evaluation and fate of the CO₂ injected, and on the potential environmental effects. Such a control requires a detailed monitoring study of the CO₂ fluxes at the soil-atmosphere interface before, during and after the injection operations.

The soil CO₂ flux has been measured using an accumulation chamber. Seven surveys have been carried out from November 2009 to summer 2011, the work is focused on the determination of a baseline flux of CO₂ and its seasonal variation, as the baseline is essential in order to detect potential leakage during injection and post injection.

The measured values were low (from 5 to 13 g·m⁻²·day⁻¹). Few outliers were identified for higher flows, mostly located in the vicinity of H-2 well. In the south of the surveyed area, geophysical data suggest the existence of deep fault connected to shallow stratigraphic horizons; there, gas flow was as low as those areas without fractures. In conclusion, the baseline of soil-atmosphere CO₂ flux in the injection site shows that natural fluxes are very low. Therefore, potential leakage is expected to be detected.